

# OPERATING MANUAL

		
<b>ATHEN</b>	<b>IBIZA</b>	<b>MACAO</b>
		
<b>MALTA</b>	<b>MANHATTAN</b>	<b>MIAMI</b>
		
<b>PALMA</b>	<b>PARIS</b>	<b>SALZBURG</b>
		
<b>SINGAPORE</b>	<b>SYDNEY</b>	

## Commercial refrigerating appliance

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SNr. 361929

Status: 09/17

ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007, SA 8000:2008

**MODEL TYPES - OVERVIEW****Commercial refrigerating appliance**

Part number operating manual: SNr. 361929	Type		Dimensions W x D x H [mm]	Maximum total weight device * [kg]
Model	R-404A	R-290		
ATHEN				
175, AD, VS	B 842(B) B 841(B)	B 842N B 872N	1 752 x 853 x 910	145
210, AD, VS	B 844(B)	B 844N B 874N	2 102 x 853 x 910	165
XL 175, AD, VS	B 843(B)	B 843N B 853N B 873N	1 752 x 993 x 910	150
XL 207, AD, VS	B 846(B)	B 746BN B 846(B)N B 856N B 876N	2 080 x 994 x 910	195
XL 210, AD, VS	B 845(B)	B 745BN B 845(B)N B 855N B 875N	2 102 x 993 x 910	165
XL 250, AD, VS	B 840(B)	B 840N	2 502 x 993 x 910	185
IBIZA				
100, AD, VS	B 839(B)	B 739BN B 839(B)N	1 000 x 851 x 925	95
145, AD, VS	B 839(B)	B 739BN B 839(B)N	1 456 x 851 x 925	115
210, AD, VS	B 839(B)	B 739BN B 839(B)N	2 100 x 851 x 925	155
MACAO				
100, AD, VS	B 839(B)	B 739BN B 839(B)N	1 000 x 851 x 925	115
145, AD, VS	B 839(B)	B 739BN B 839(B)N	1 456 x 851 x 925	140
210, AD, VS	B 839(B)	B 739BN B 839(B)N	2 100 x 851 x 925	185
MALTA				
145, AD, VS	B 822(B)(M)	B 722(B)(M)N B 822(B)(M)N B 862N	1 456 x 855 x 833	125
185, AD, VS	B 828(B)(M)	B 728 (B)(M)N B 828(B)(M)N B 868N	1 851 x 855 x 833	150
MANHATTAN				
175, AD, VS	B 849(B)(M)	B 749BN B 849(B)N B 879N	1 753 x 995 x 910	150
210, AD, VS	B 847(B)(M)	B 747BN B 847(B)N B 877N	2 103 x 995 x 910	165
MIAMI				
145, AD, VS	B 893(B)	B 793BN B 893(B)N	1 457 x 854 x 833	115
185, AD, VS	B 894(B)	B 794BN B 894(B)N	1 850 x 994 x 834	145
210, AD, VS	B 895(B)	B 795BN B 895(B)N	2 102 x 854 x 833	160
250, AD, VS	B 896(B)	B 796BN B 896(B)N	2 502 x 854 x 833	180
PALMA				
185, AD, VS	B 821(F)	B 821N	1 851 x 853 x 833	150
PARIS				
145, AD, VS	B 823(B)(F)	B 723BN B 823(B)N	1 457 x 853 x 833	110
175, AD, VS	B 824	B 824N	1 752 x 853 x 833	130
180, AD, VS	B 824	B 824N	1 799 x 853 x 833	135
185, AD, VS	B 824(M)(F) B 827(B)(M)	B 727(B)(M)N B 824N B 827(B)(M)N B 864N	1 854 x 853 x 833	140
210, AD, VS	B 825(B)(M)(F) B 829(F)	B 725(B)(M)N B 825(B)(M)N	2 102 x 853 x 833	160

250, AD, VS	B 826(B)(F)	B 726BN B 826(B)N	2 502 x 853 x 833	175
<b>SALZBURG</b>				
72/175	B 800(B)	B 700BN B 800(B)N(-7)	1 750 x 800 x 720	150
72/210	B 801(B)	B 701BN B 801(B)N	2 100 x 800 x 720	140
83/175	B 802(B)(F)	B 702BN B 802(B)N	1 750 x 800 x 833	135
83/210	B 803(B)(F)	B 703BN B 803(B)N	2 100 x 800 x 833	150
83/250	B 820		2 500 x 800 x 833	160
<b>SINGAPORE</b>				
145, AD, VS	B 851	B 851N	1 457 x 853 x 910	100
185, AD, VS	B 841	B 841N B 871N	1 850 x 993 x 911	165
210, AD, VS	B 844	B 844N B 874N	2 102 x 853 x 910	170
250, AD, VS	B 850	B 850N B 870N	2 502 x 853 x 910	180
<b>SYDNEY</b>				
175, AD, VS	B 922	B 750BN B 922N	1 752 x 993 x 910	180
213, AD, VS	B 924	B 751BN B 924N	2 132 x 993 x 860	175
223, AD, VS	B 924	B 751BN B 924N	2 232 x 993 x 860	180
230, AD, VS	B 925	B 752BN B 925N	2 302 x 993 x 910	205
250, AD, VS	B 926	B 753BN B 926N	2 502 x 993 x 910	215
XL 175, AD, VS	B 927	B 754BN B 927N	1 752 x 1 043 x 910	160
XL 210, AD, VS	B 928	B 755BN B 928N	2 102 x 1 043 x 910	205
XL 250, AD, VS	B 929	B 756BN B 929N	2 502 x 1 043 x 910	225

\*Execution-specific deviations possible. For details, please refer to the freight documents. These must be carried out by the operator.

Technical specifications are subject to change without notice.

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# 1 Safety

## 1.1 General information on the manual and safety

This operating manual (hereinafter referred to as the “manual”) forms part of the device and enables safe and efficient operation. The safety section provides information about important safety aspects for the protection of persons, property and materials. Task-related warnings/notes are contained in the individual chapters.

This manual is available in printed form in German (DE), English (EN), French (FR), Italian (IT), Spanish (ES) and Portuguese (PT). The safety section is available in print in all languages. However, it is not a substitute for reading the complete manual. All language translations of the complete manual can be found on the enclosed CD and electronically on our website [www.aht.at](http://www.aht.at).

This manual is intended for the following **target groups**:

- **Operator**
- **Operating staff**
- **Qualified staff**: AHT service partner, AHT service technician, AHT customer service, AHT installation service, AHT assembly service

Staff: This term is used when the manual is addressed to all target groups.

This manual must be available and accessible to the local staff.

The staff must read the manual carefully before use.

All figures represent symbol displays.

### 1.1.1 Limitation of liability

All the details in this manual were compiled in consideration of the standards and legal regulations applicable at this time, as well as the experience of the manufacturer and qualified staff. The manufacturer accepts no liability for damage to persons or property (devices, goods, etc.) resulting from:

- Non-observance of the manual and the regulations/safety instructions contained therein.
- Failure to comply with the local safety regulations.
- Inappropriate use (foreseeable misuse).
- Use of unauthorized and non-trained staff.
- Unauthorized equipment conversions and technical modifications by the operator himself.
- Use of spare parts not approved by the manufacturer.
- Failure of the power supply or electrotechnical safety devices.
- Typesetting and print errors.

Failure to observe the above points will invalidate the warranty claims.



The contractual obligations agreed to under the contract, the general terms and conditions of sale and delivery of the “AHT Cooling Systems GmbH” (hereinafter “AHT”) and the statutory provisions applicable at the conclusion of the contract apply.

Technical specifications are subject to change without notice.

The local commercial law regulations and safety regulations/provisions and the essential health and safety requirements of the device apply.

## 1.2 Explanation of Symbols

Safety and warning notices are indicated in this manual by **symbols** and **signal words**. Signal words refer to the risk level of the hazard.

Signal words	Meaning
 <b>WARNING</b>	Hazard with moderate risk level. Can result in danger to life or serious injury if not prevented.
 <b>CAUTION</b>	Hazard with low risk level. Can result in minor or moderate injury if not prevented.
<b>NOTE</b>	Individual notes or important collective notes for preventing material or property damage.

Symbol	Meaning	Symbol	Meaning
	General warning sign		Stopping and storage forbidden
	Warning of electrical voltage		Follow the manual
	Warning of electrical voltage. Do not connect damaged power cords to the circuit		Disconnect before maintenance or repair
	Warning of flammable substances		Wear eye protection
	Warning of skidding		Wear hand protection
	Warning of hand injuries		Separate collection of electrical and electronic equipment
	Warning of ground conveyors		Explosion protection sign
	Warning of tilting risk	- •	Listing Listing of notes/ safety and warning notes
	Warning against low temperature / frost	▶	Action / Measure / Prohibition
	Warning, hot surface	→	Cross-reference to a different place in the document
	Warning against objects falling down	(AD)	Device with semi-automatic defrosting (automatic + semi- automatic defrosting)
	Entering the area is prohibited		Device connecting cable
	Drilling forbidden		Light connecting cable

### 1.3 Intended use

- Depending on the series, the device is suitable for the storage of packaged cooled or packaged deep-frozen food products (see Chapter 2.3).
- The operator is responsible for the correct operation of the devices.
- Operate the device in a stable operating position (horizontal alignment).
- Operate the device only mounted on the sliding feet and swivel castors.
- Note the installation instructions in → Chapter 7.
- Operate the device only with a glass cover.

#### **WARNING**

Danger from foreseeable misuse

- ▶ No technical modifications may be made to the device.
- ▶ Steam or high-pressure cleaners may not be used for basic cleaning (see → Chapter 10.2.1).
- ▶ Do not store explosive substances, e.g. aerosol containers with flammable propellant gas, in this device.
- ▶ The device may only be operated if all the required safety devices are present and fully functional.

**NOTE**

- **Material and property damage** from foreseeable misuse.
  - ▶ Do not operate the device above the climate class indicated on the power rating plate (see → Chapter 2.2.1) or on the additional stickers.
  - ▶ The ambient temperature must not be less than 16°C (60.8°F).
  - ▶ Regularly check that the device is in good condition. Damage must be repaired immediately.
  - ▶ Before storing the goods and during operation, the temperature must be checked for correctness (see → Chapter 4.1.).
  - ▶ Stored goods must be checked by the operator in the case of power failure (temperature control).
  - ▶ Check regularly for foreign objects in the goods area. Incorrectly stored goods must be removed immediately.
  - ▶ Regularly check that the glass cover is closed.
  - ▶ Operation of a device with damaged glass cover / glass element (crack, fissure, breakage) is no longer possible.
    - Remove goods from the damaged device and rearrange in a functional device with the same product temperature class.
    - Switch off the damaged device after removing the goods. (Decommissioning → see Chapter 9.2)
    - Contact the maintenance service (see → Chapter 10.5).
  - ▶ Do not apply stickers or film to the glass surfaces.
  - ▶ Observe the minimum distances to the boundary walls and to other devices to avoid hindering the air circulation (minimum distances, see → Chapter 7).
  - ▶ Do not use the glass cover as storage place for diverse objects.

## 1.4 Staff requirements

**⚠ WARNING**

Insufficient qualification. Risk of injury.

- ▶ All activities may only be performed by qualified staff.
- ▶ The staff must read and understand this manual before starting work.

**Operator:**

- The operator must ensure that this manual has been read and understood by the operating staff (training).
- The operator is responsible for the fact that faults during operation (e.g. alarms, temperature deviations, etc.) are recognized by the operating staff and appropriate measures are taken (→ see Chapters 9.3 and 10.4).

**Operating staff:**

- The operating staff must be trained by the operator on the transferred tasks and possible dangers with the aid of this manual.
- Only trained operating staff are allowed to operate and clean the device.

**Qualified staff:**

- Only AHT-authorized, qualified staff and specialists are allowed to perform work on the device, e.g.:
  - Maintenance (upkeep, service and repair).
- Only staff trained in handling combustible refrigerants may perform work on the refrigerant circuit of R-290 devices.
- Only staff trained in handling combustible refrigerants may perform work on the refrigerant circuit of R-404A devices.
- Only qualified electricians are permitted to work on the electrical system.

Persons (including children) with limited physical, sensory or mental abilities are allowed to operate the device only under supervision and after instruction, and must not perform any maintenance work. Children must not play with the device.

Working under the influence of alcohol and drugs is prohibited.

## 1.5 Personal protective devices

**Wear hand protection**

- ▶ Protection against heavy device parts during transport, unpacking, set-up, installation and disposal.
- ▶ Protection against sharp edges of the device, rotating parts and hot surfaces during maintenance, service and repair work.
- ▶ Protection from contact with fluid/leaking refrigerant in the case of a leak in the refrigerant circuit.
- ▶ Protection against low temperature when loading and cleaning.
- ▶ For removal of pieces of glass and glass splinters after glass breakage.

**Wear eye protection**

- ▶ Protection from contact with fluid/leaking refrigerant in the case of a leak in the refrigerant circuit.

## 1.6 Special hazards

### 1.6.1 Electrical voltage

Work on the electrical system may only be performed by qualified staff.

In the case of fault messages or damage to the device, contact the maintenance service immediately (see → Chapter 10.5).

#### ⚠ WARNING



Contact with live parts may cause electric shock. Risk of fire due to sparks or overloading.



- ▶ Do not connect any damaged devices or damaged parts (e.g. power cables) to the circuit.
- ▶ Check the safety devices for completeness and functionality.

- ▶ Guards and covers on the device must not be removed.

- ▶ Before connecting to power, note the following:

- Applicable local electrical safety regulations
- Applicable standards and safety notices.
- Information on the power rating plate (see → Chapter 2.2.1).

- ▶ In the case of damage to the device during operation and before maintenance work, observe the following safety rules:



1. Disconnect the device (switch off all pins on all sides).
2. Secure the device against restarting.

- ▶ Damaged parts must be replaced only by professionals, e.g.:

- power supply cables
- Changing of lamps (see → Chapter 10.3.1)

- ▶ Do not squeeze or bend power supply cords.

- ▶ Do not use extension cords or multiple power strips.



- ▶ Steam or high-pressure cleaners may not be used for basic cleaning (see → Chapter 10.2.1).

- ▶ Concealed electrical parts must not be damaged. Drilling or other work on the device is not permitted.

### 1.6.2 Refrigerant circuit

Work on the refrigerant circuit may only be performed by qualified staff.

In the case of fault messages or damage to the device, contact the maintenance service immediately (see → Chapter 10.5).

#### ⚠ WARNING



Work on the refrigerant circuit may only be performed by qualified staff.



Fluid refrigerant causes frostbite on the skin.

- ▶ Work on the refrigerant circuit must only be performed by qualified staff.

- ▶ Protect hands and face from contact with fluid/leaking refrigerant.

- ▶ Wear protective goggles and gloves.

#### NOTE

- **Material, property and environmental damage** caused by damage to the refrigerant circuit.

- ▶ Do not expose the device during storage and transport to temperatures higher than 70°C (158°F).

- ▶ Avoid transmission of pulsations and vibrations to the device.

- ▶ Avoid external force to the device such as careless movements with floor trucks or floor cleaning machines.

- ▶ Drilling or other work on the device is not permitted.

- ▶ Do not squeeze or bend pipes.

- ▶ To accelerate the defrosting process, do not use any mechanical devices or other means (e.g. ice scrapers).

- ▶ Steam or high-pressure cleaners may not be used for basic cleaning (see → Chapter 10.2.1).

#### 1.6.2.1 Combustible refrigerant

Safety and warning information for devices with combustible refrigerants.

#### ⚠ WARNING

- The refrigerant R-290 belongs to safety group A3 according to DIN EN 378-1.

The refrigerant used and the fill quantity are indicated on the power rating plate (see → Chapter 2.2.1).

- The refrigerant is highly flammable.

- If leaks occur, the refrigerant can escape and create an explosive gas/air mixture. This can lead to fire and explosion with subsequent fire risk.



- ▶ Keep away from ignition sources (heat, sparks, open flames, hot surfaces).

- ▶ To remove condensation and for cleaning, use a damp cloth or sponge.

Do not use dry cloths or sponges for rubbing dry.

(Danger of electrostatic charging and sparking).

- Requirements for the installation area:

- ▶ The device must only be installed in well-ventilated areas.
- ▶ Do not install the device in cellars or lowered areas.
- ▶ Channels and wall penetrations must be sealed underneath and behind the device, in accordance with fire protection laws.

- Fluid refrigerant causes frostbite on the skin.



- ▶ Protect hands and face from contact with fluid/leaking refrigerant.
- ▶ Wear protective goggles and gloves.

- Do not close venting openings in the device housing. Use only original accessory parts.
- To accelerate the defrosting process, do not use any mechanical devices or other means (e.g. ice scrapers).
- Do not damage the refrigerant circuit.

- ▶ Do not expose the device during storage and transport to temperatures higher than 70°C (158°F).

- ▶ Avoid transmission of pulsations and vibrations to the device.

- ▶ Avoid external force upon the device such as careless movements with floor trucks or floor cleaning machines.



- ▶ Drilling or other work on the device is not permitted.
- ▶ Do not squeeze or bend pipes.

- Do not operate any electrical devices (e.g. wet vacuum cleaners) within the refrigerator compartment that are not of the type recommended by the manufacturer. Devices with explosion protection markings (see → 1.2) are permitted.

- Steam or high-pressure cleaners may not be used for basic cleaning (see → Chapter 10.2.1).

- Work on the electrical system and the refrigeration system must only be performed by qualified staff (staff trained in flammable refrigerants).

- ▶ Opening the refrigerant circuit and suctioning of the refrigerant may only be performed in a well ventilated area outside of business hours of the market (without customer traffic) or outdoors.



- ▶ Disconnect the device before each maintenance/repair.

- ▶ Secure the device against restarting.

- ▶ During repairs, a knowledgeable person who knows the local conditions must be available as the contact person for the AHT-authorized qualified staff.

- Dispose of devices with flammable refrigerant and devices with insulating foam (thermal insulation polyurethane foam with pentane) appropriately. Inquire with the responsible authorities about the safety and statutory disposal regulations applicable to you.

The product was designed to take into account the environmental and disposal friendliness of AHT devices. The refrigerant R-290 and the propellant pentane (for the insulating foam) do not have any ozone depletion potential and do not contribute directly to the greenhouse effect.

### 1.6.3 Mechanical hazards

#### **WARNING**



- Transport the device with floor trucks. Risk of injury to persons during collisions.
  - ▶ Observe the transport routes for floor trucks.
  - ▶ Secure the cargo.
  - ▶ Floor trucks must only be operated by trained persons.



- Danger of tilting of the device. Persons can be jammed (see → Chapter 7).
  - ▶ Do not climb onto or into the device.



- Disposal of packaging material and films. Danger of suffocation.
  - ▶ Keep packaging material and foils away from children.
  - ▶ Do not let children play with them.
- Missing and/or not fully functional safety devices. Danger of injury due to e.g. rotating parts.
  - ▶ Check the safety devices for completeness and functionality.
  - ▶ Guards and covers on the device must not be removed.

**⚠ CAUTION**

- Cutting injuries in the case of material breakage. Danger of falling.
  - ▶ Do not climb onto or into the device.



- Falling objects. Impact injury. Cutting injury in the case of glass breakage.
  - ▶ Do not place objects on the device.



- Leakage of defrosted water. Slipping hazard.



- ▶ Check for puddle formation in front of and below the device.
  - ▶ Remove spilled defrosted water immediately.

- Closing the glass cover. Hands (parts of your body) can be jammed.
  - ▶ During closing, do not reach into the opening gap.
  - ▶ When closing, pay attention to other people.

**Safety when handling glass****⚠ CAUTION**

- Glass breakage hazard. Cutting injuries to the body. Impact injury.
  - ▶ Do not install devices with multi-pane insulating glass at altitudes above 2,000 m. Multi-pane insulating glass can break due to air pressure differences.
  - ▶ Do not apply any load to the glass cover.
  - ▶ Check for damage (crack, fissure, breakage) of the glass cover / glass elements. In the event of damage, contact the maintenance service immediately (see → Chapter 10.5).
  - ▶ Do not climb onto or into the device.
  - ▶ The storage of glass containers in freezers is forbidden.
  - ▶ Check for breakage of stored glass containers (refrigerators).



- Disposal of broken glass. Cutting injuries to hands.
  - ▶ Wear protective gloves to remove splintered glass parts and the goods that may have been damaged.
  - ▶ Remove all splintered glass parts and damaged goods carefully and completely.

Dispose of splintered glass parts in an environmentally-friendly manner.

**1.6.4 Residual risks**

The manufacturer assumes no liability whatsoever for damage that has been caused by non-observance of this manual.

## 2 Product description

### 2.1 General information

AHT products comply with EU Directive 1907/2006 (REACH) for the registration, evaluation, approval and limitation of chemical materials.

In the product design, the manufacturer has considered the environmental and disposal-friendliness of the device, in particular, for the refrigerant propane (R-290) and the propellant pentane (for the insulating foam). Propane does not have any ozone depletion potential (ODP) and only a very low greenhouse potential (GWP) of 3. The refrigerant R-404A is recorded in the Kyoto Protocol. It does not have any ozone depletion potential (ODP) and has a greenhouse potential (GWP) of 3922.

### 2.2 Technical data

Important technical data can be found on the power rating plate (see → Chapter 2.2.1).

- External dimensions - Total weight of the device	See → Device models overview
Airborne noise emissions	Emission sound pressure level < 70 dB(A)

<b>M-package temperature class</b> (product temperature class) according to EN ISO 23953-2 (device-specific)
L1, S



#### Device series with mechanical controller

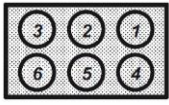
Series	Operational area/ operating mode	Adjustable levels
		Level
(-)	Deep-freeze “-”	1-9
(V)	Deep-freeze “-”	1-9 (GEFRIEREN/FREEZING)
	Cooling “+”	1-9 (KÜHLEN/CHILLING)

#### Device series with electronic controller

Series	Operational area/ operating mode	Adjustable application
(-)	Deep-freeze “-”	A1 / A2
(S)	Meat cooling “S”	A3
(U)	Deep-freeze “-”	A1 / A2
	Meat cooling “S”	A3
	Cooling “+”	A4

#### Technical interfaces

<b>Power supply</b> (device-specific; observe the specifications on the power rating plate, see → 2.2.1)	- 220-240 V 50 Hz - 220-240 V 60 Hz - 110-120 V 60 Hz
<b>Plug types</b>	Country-specific versions are present
<b>Connecting cable or IEC box with connecting cable attached</b>	
Device connecting cable 	Labeling tag with snowflake
Light connecting cable 	Labeling tag with lamp

Combined device / light connecting cable	No labeling tag
Minimum requirements for the connecting cable	
Minimum cross-section	Device: 1 mm² /18AWG Light: 1 mm² /18AWG
Cabling	3-pin cable
<b>External warning system</b> as plug connection on the device, see → Chapter 9.3. Connector: available as an accessory from maintenance service, see → Chapter 10.5	6-pin socket housing  Potential-free contacts Load with max. 24 V / 2 A (safety low-voltage)

#### Electrical protection (see → Chapter 7.2)

Fuse	Rated current [A]		Triggering characteristics	Type	Fault current [mA]
	for 220-240 V	for 110-120 V			
<b>LS (CB)</b>	10 (1 device) 16 (2 devices)	15	C (time-lag)	—	—
<b>FI (RCCB/GFCI)</b>	≥ 40	≥ 40	—	Surge current-resistant, short-circuit delayed (e.g. G/AP-R)	30
<b>FI-LS (RCBO)</b>	10 (1 device) 16 (2 devices)	15	C (time-lag)	Surge current-resistant, short-circuit delayed (e.g. G/AP-R)	30

#### Recommended light colors:

Description	LED	Fluorescent tubes
Red light (meat)	076	-
Neutral white	4000 K	840/940
Cool white	5000 K	850/950
Ultra cool white	6500 K	865/965

Customer-specific deviations possible.

Further information: Maintenance services (see → Chapter 10.5).

### 2.2.1 Power rating plate and serial number

When handling the device, the information on the “power rating plate” must be observed. This is found on a sticker at the rear side of the device (outside) and contains important technical data about

- Device name and device type,
- Serial number (see → Chapter 10.4),
- Climate class\* (see → Chapter 1.3),
- Rated voltage and rated frequency,
- Rated current and rated consumption,
- Refrigerant and amount used,
- Net content,
- Date of manufacture,
- Test mark,
- and other technical data.

\*Examples of climate classes:

Climate class according to ISO 23953-2	Ambient temperature [°C]	Relative humidity [%]
3	25	60
Classification according to NSF 7	Ambient temperature	
Type I display refrigerator	≤ 75 °F (24 °C)	

## 2.3 Intended use

Devices with operating mode **Deep-freezing “-”** are intended for the storage of packaged deep-frozen food products.

Devices with operating mode **Cooling “+”** are intended for the storage of packaged cooled food products.

Devices with operating mode **Meat cooling “S”** are intended for the storage of packaged cooled food products especially for meat products (e.g.: minced meat).

For additional information, see → Chapter 1.3

## 3 Layout and function

The device is a compact device ready to plug in. All individual devices are delivered ready for operation and have their own control unit. The devices are pre-programmed at the factory. Each device contains one or more hermetically closed refrigerant circuits, the components of which are technically connected to each other permanently. The design of the individual device models can vary.

### Device series:

Devices from the series (-) are designed for the deep-freezing “-” operating mode.

Devices from the series (S) are designed for the meat cooling “S” operating mode.

With universal devices (U), you can choose between 3 operating modes: Deep-freezing “-”, Meat cooling “S” and Cooling “+”.

With universal devices (V), you can choose between 2 operating modes: Deep-freezing “-” and Cooling “+”.

The switching between the operating modes is carried out via a controller (see → Chapter 4.2.1/4.2.2.2/4.2.3.2).

The waste heat generated in the device is discharged to the ambient air via a liquefier.

Devices **with** (AD) function defrost automatically at regular intervals (see → Chapter 3.1). In addition, a semi-automatic defrosting (see → Chapter 4.2.2.4/4.2.3.4) can be started by the operating company. For devices with operating mode cooling (“+”, “S”), the automatic defrosting can be set to inactive ex-factory.

Devices **without** (AD) function do not have any automatic defrosting.

The operating company must carry out a complete defrosting (see → Chapter 10.1.1).

### NOTE

- **Material and property damage** due to the formation of ice on the cooling surfaces.
  - Devices without (AD) function must be defrosted completely manually by the operating company at regular intervals (complete defrosting).

For hygienic reasons, a complete defrosting (see → Chapter 10.1.1) with subsequent cleaning must be carried out on all devices.

Depending on the device model, an individual inner area design (wall grille, air ducts, floor grille, partition wall grille, upright baskets) is possible.

### NOTE

- **Property damage** caused by missing interior equipment.
  - Devices with (AD) function may only be operated with wall grille.
  - Devices for meat cooling “S” may only be operated with wall grille, air ducts and shelf grille.

All devices are equipped with stacker marks (see → Chapter 9.1).

All devices are equipped with glass covers.

The device is equipped with sliding feet or swivel castors to make changing the location easier (back and forth) (device-specific).

## 3.1 Automatic defrosting

Devices with (AD) function are equipped with an automatic defrosting.

During the automatic defrosting, “dEF” or “dFr.” appear on the screen of the display (depending on the controller, see → Chapter 4.2.2/4.2.3).

The frequency, duration and time of the defrosting are preset.

Defrosting frequency: 2 / week (or customer-specific)

Defrosting period: up to 99 min. (device-specific)

Defrosting time: The start time is controlled via the real-time clock and takes place during the night.

Defrosting time with electronic controller		
AHT controller	“Stand-alone” device	Start time 00:00
	device networked via bus	delayed between 21:00 and 03:00
AHT controller (SECOP)	“Stand-alone” device	
	device networked via bus	

The accumulated condensation water is guided out of the device interior into the machine room and evaporated there.

### CAUTION



Leakage of defrosted water.  
Slipping hazard.

- Check for puddle formation in front of and below the device.
- Remove spilled defrosted water immediately.

- Contact the maintenance service immediately (see → Chapter 10.5).

If the automatic defrosting takes place during business hours, contact the maintenance service (see → Chapter 10.5).

If required, a semi-automatic defrosting (see → Chapter 4.2.2.4/4.2.3.4) can be initiated.

After each defrosting (automatic or semi-automatic), this is blocked for 24 hours.

## 3.2 Device lighting function

Switching the device lighting on and off can be carried out (device-specific) by the bus system, an external switch (e.g. market light) or by an internal switch (see → Chapter 4.3).

For technical data, see → Chapter 2.2.

## 4 Operating and display elements

### 4.1 Temperature display

The temperature of the device is set in the factory so that the M package temperature class specified by the manufacturer (see → Chapter 2.2) is observed.

#### Indication of device temperature:

Temperature display in the front area (see → Chapter 4.2.2 Fig. 2.2) or display screen on the operating element (see → Chapter 4.2.1/4.2.2/4.2.3).

With (V) devices: Thermometer in the interior

#### Temperature control:

Responsibility: Operating staff

Frequency: several times daily

### 4.2 Operating elements and displays

Depending on the device model, there are different versions of the operating elements (controller). Where required, remove the protecting Plexiglas cover with a suitable screwdriver to access the operating elements.

#### ⚠ CAUTION

- Removing the Plexiglas cover with a screwdriver. Risk of stab wounds.
- Use the tool carefully.
  - Make sure that the screwdriver size is correct to avoid slipping.
  - After using the screwdriver, ensure correct and safe storage.

#### NOTE

- **Property damage** caused by making incorrect changes to the parameters on the operating element.
  - After operating, re-secure the Plexiglas cover.

#### 4.2.1 Mechanical controller

Buttons and rotary knobs are available as operating elements (device-specific).  
For technical data, see 2.2.

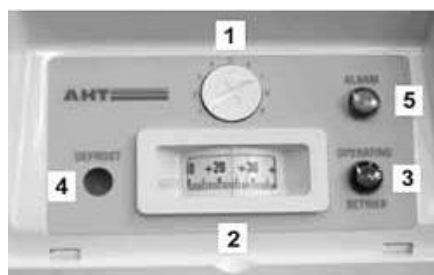


Fig. 1.1: Mechanical controller on series (-) operating elements and displays



Fig. 1.2: Mechanical controller on series (V) operating elements and displays

No.	Operating element	Function
1	Rotary knob [1]	Temperature setting <b>Level 1:</b> Warm <b>Level 9:</b> Cold
1a	Rotary knob [1a] for deep-freezing (-)	
1b	Rotary knob [1b] for cooling (+)	
4	[DEFROST] button	<ul style="list-style-type: none"> <li>- Start defrosting manually</li> <li>- Switch the cooling function on or off</li> </ul>
6	Rocker switch [6]	Switching between deep-freezing “-” and cooling “+”

No.	Lamp	Display description
2	-	Temperature display
3, 3a, 3b	green	Device fault-free and in operation (normal mode) 3, 3a: Deep-freeze “-” 3b: Cooling “+”
	off	<ul style="list-style-type: none"> <li>- [DEFROST] button is pressed “Defrost manually” is activated.</li> <li>- Cooling function off</li> </ul>
5	red	optional warning lamp: Temperature too warm

#### Temperature setting:

Turn rotary knob [1], [1a] or [1b].

- Clockwise for colder temperatures.
- Counter-clockwise for warmer temperatures.

#### Switch the cooling function on or off, or defrosting manually

Switch off the cooling function or start the defrosting manually:

- Press the [DEFROST] button.
- The green lamp goes out.

After finishing the defrosting process, the cooling function must be switched back on.

Switch on the cooling function (start normal mode):  
 Press the **[DEFROST]** button.  
 The red warning lamp illuminates until the temperature limit value has been reached.  
 Then the lamp is lit green.

#### Switching between operating modes:

Press rocker switch no. 6.

Operating mode deep-freezing "-":

Lamp 3a illuminates green

Operating mode cooling "+":

Lamp 3b illuminates green

## 4.2.2 AHT electronic controller

There are 4 buttons available as operating elements, which are allocated as follows:

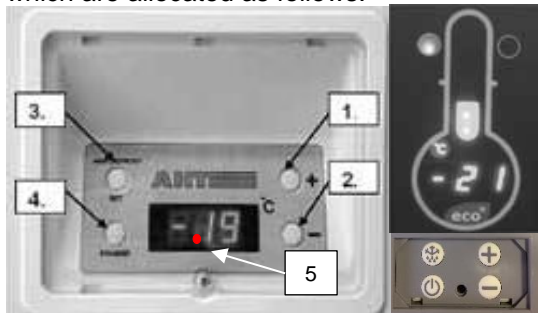


Fig. 2.1

Fig. 2.2

Electronic controller, operating elements and screen displays

No.	Control element	Function
1.	Button <b>[+]</b>	- Application change (A1-A4) - Increase bus address
2.	Button <b>[-]</b>	- Application change (A1-A4) - Reduce bus address
3.	Button <b>[MAN. DEFROST]</b> 	- Start semi-automatic defrosting
4.	<b>[STANDBY] button</b> 	- Start defrosting manually - Switch the cooling function on or off - Call up fault code (if point flashes)

No.	Display	Meaning
5	Flashing point	Alarm display

### 4.2.2.1 Switch the cooling function on and off

Switch cooling function off (start the defrosting manually):

Press the **[STANDBY]** button for min. 1 sec.  
 "---" is shown on the display.

Switch on the cooling function:

Press the **[STANDBY]** button for min. 1 sec.  
 The temperature is shown on the screen display after several seconds.

### 4.2.2.2 Setting the application

The following applications A1-A4 (customer-specific approval) can be selected.

Display application set:

Press button **[+]** or button **[-]** for min. 1 sec.  
 "StP" and the currently set application, e.g. "A1" are shown alternately on the display screen.

If no changes are required, the display returns to the temperature display after approx. 10 seconds.

Change application:

Press button **[+]** or button **[-]** for min. 1 sec.  
 By pressing button **[+]** or button **[-]** several times, you can run through all released applications.

Accept new entry:

The new application set is taken over automatically after 10 seconds.

### 4.2.2.3 Assigning the bus address

Before assigning, the devices must be networked with a corresponding bus cable. On the last device, the bus cabling must be terminated with a terminal resistance. By default, the controllers are delivered with the bus address "00" (corresponds with a "stand-alone" device).

For the identification of several devices in a bus system, the bus addresses must be assigned beginning with "01". Bus addresses must not be assigned more than once.  
 Then we recommend entering the addresses according to the actual wiring sequence. In doing so, max. 48 addresses are possible.

#### Procedure for assigning the bus addresses:

- 1.) Keep the **[+]** button and **[-]** button pressed for at least 5 seconds at the same time.  
 "Adr" is shown on the display alternately with the current bus address, e.g. "00".
- 2.) Assign a higher bus address:  
 Press the **[+]** button briefly.  
 Assign a lower bus address:  
 Press the **[-]** button briefly.
- 3.) Accept new bus address:  
 wait 10 seconds.  
 The temperature is shown on the display again.
- 4.) Repeat points 1 to 3 on each device and set a free bus address.

### 4.2.2.4 Semi-automatic defrosting

- 1.) Start the semi-automatic defrosting:  
 Press the **[MAN DEFROST]** button briefly.  
 "-d-" and then "dFr." is shown on the display.  
 Defrosting duration: up to 99 min. (device-specific).

**24-hour defrosting block:**

If "---" is shown briefly on the display and then the temperature, the 24 hour defrosting block is active.

**2.) End the semi-automatic defrosting:**

The device automatically reverts to normal mode.

The current temperature is shown on the display again.

**4.2.2.5 Alarm display and acknowledgment****Alarm display:**

The **fault code** flashes alternately on the display with the temperature for several minutes. Thereafter, only the point flashes (see → Fig. 2.1 No. 5).

With each full hour, the fault code is shown on the display for approx. 10 minutes.

Calling up the **fault code** in-between:

Press the **[STANDBY]** button briefly.

Depending on the fault, an **acoustic signal** can also be issued by a built-in buzzer.

**Alarm acknowledgment:**

The **fault code** or the **flashing point** and the **acoustic signal** CANNOT be acknowledged.

**List of fault codes:**

Fault code	Meaning
Bus	Bus fault
Col	Address collision bus
F1	Sensor fault F1
F2	Sensor fault F2
F3	Sensor fault F3
dFr/F3 alternating	Defrosting system fault
Clock	Time/date fault
EE	Data backup fault
Flashing temperature value	Excessive temperature alarm
FU1**)	Communication fault controller/inverter
FU2**)	Overvoltage fan output of the inverter
FU3**)	Compressor start fault
FU4**)	Compressor overvoltage
FU5**)	Inverter excessive temperature
FU6**)	Inverter internal fault
FU7**)	Inverter supply voltage outside the limits

\*\* only with speed-controlled compressor (VS)

**4.2.3 AHT electronic controller (SECOP)**

There are 3 buttons available as operating elements, which are allocated as follows:



Fig. 3: Electronic controller, operating elements and screen displays

No.	Function
1	Button <b>[+/-]</b> - Application change (A1-A4) - Increase bus address
2	Button <b>[MAN. DEFROST]</b> - Start semi-automatic defrosting
3	Button <b>[STANDBY RESET]</b> - Start defrosting manually - Switch the cooling function on or off - Call up fault code (if point flashes) - Acknowledge acoustic alarm

No.	Display	Meaning
4	Illuminated red point (next to the horn signal)	Alarm display

**4.2.3.1 Switch the cooling function on and off**

Switch cooling function off (start the defrosting manually):  
Press the **[STANDBY RESET]** button for minimum 3 sec. "---" is shown on the display.

Switch on the cooling function:

Press the **[STANDBY RESET]** button for minimum 3 sec. The current temperature appears on the display screen.

**4.2.3.2 Setting the application**

The following applications A1-A4 (customer-specific approval) can be selected.

Display application set:

Press the **[+/-]** button briefly.

The currently set application is shown on the display, e.g. "A1".

If no changes are required, the display returns to the temperature display after approx. 5 seconds.

Change application:

By pressing the **[+/-]** button several times, you can run through all the released applications.

Accept new entry:

The newly set application is accepted automatically approx. 5 seconds after pressing the button for the last time.

**4.2.3.3 Assigning the bus address**

Before assigning, the devices must be networked with a corresponding bus cable. On the last device, the bus cabling must be terminated with a terminal

resistance. By default, the controllers are delivered with the bus address "1" (corresponds with a "stand-alone" device).

For the identification of several devices in a bus system, the bus addresses must be assigned beginning with 1. Bus addresses must not be assigned more than once. Then we recommend entering the addresses according to the actual wiring sequence. In doing so, max. 247 addresses are possible.

#### Procedure for assigning the bus addresses:

- 1.) Press the **[STANDBY RESET]** button for at least 3 seconds.  
"---" is shown on the display.  
Now the cooling function is switched off.
- 2.) Press the **[+/-]** button 3 times successively after that.  
"Adr" is shown on the display alternately with the current bus address, e.g. "1".
- 3.) Assign the next highest bus address (individual step):  
Press the **[+/-]** button briefly.  
Quick run through the bus addresses:  
Press the **[+/-]** button for longer
- 4.) Accept new entry:  
Wait for 5 seconds.  
"---" is shown on the display.

#### NOTE

**Property damage** when assigning the bus addresses by switching off the cooling function.  
► After assigning the bus addresses, the cooling function must be switched back on again (see → Point 5).

- 5.) Switch the cooling function back on.  
Press the **[STANDBY RESET]** button for a minimum of 3 sec.  
The current temperature is shown on the display.
- 6.) Repeat points 1 to 5 on each device and set a free bus address.

#### 4.2.3.4 Semi-automatic defrosting

- 1.) Start the semi-automatic defrosting:  
Press the **[MAN DEFROST]** button briefly.  
"dEF" is shown on the display.  
Defrosting duration: up to 99 min. (device-specific).

#### 24-hour defrosting block:

If "---" is shown briefly on the display and then the temperature, the 24 hour defrosting block is active.

- 2.) End the semi-automatic defrosting:  
The device automatically reverts to normal mode. The current temperature is shown on the display again.

#### 4.2.3.5 Alarm display and acknowledgment

##### Alarm display:

The **fault code** flashes alternately on the display with the temperature. The red point illuminates on the display at the same time (see Fig. 3 No. 4).

Depending on the fault, an **acoustic signal** can also be issued by a built-in buzzer (device-specific).

##### Alarm acknowledgment:

##### Fault code and acoustic alarm (device-specific):

Press the **[STANDBY RESET]** button briefly.

The current temperature and the red point are shown on the display. The red point (see Fig. 3 No. 4) illuminates until the fault has been rectified.

Calling up the **fault code** in-between:

Press the **[STANDBY RESET]** button briefly.

The fault code is shown on the display for approx. 5 seconds. Then the current temperature is shown on the display again.

##### List of fault codes:

Fault code	Meaning
F1	Sensor fault F1
F2	Sensor fault F2
F4	Sensor fault F4
A90	Time/date fault
E20	Excessive temperature alarm
E21	Excessive temperature at F4
E43	Insufficient temperature alarm
E60	Temperature logger alarm
E70	Electronic fault
E75	Excessive temperature electronics
E80	Compressor fault
E92	Compressor fault due to E75
E93	Voltage outside tolerance
E95	Frequency outside tolerance
Err	No communication with the display
tst	Electronics in test mode

#### 4.3 Internal switch device lighting

An internal switch (device-specific) is available to switch the device lighting on/off.

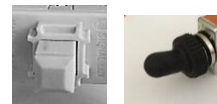


Fig. 4: Example for device lighting internal switch

### 5 Transport and storage

Check the device for transport damage after delivery. Contact the maintenance service in case of damage (see → Chapter 10.5).

#### ⚠ WARNING



For devices of type R-290: Damage to refrigerant circuit. The refrigerant can escape and create an explosive gas/air mixture. Risk of fire.

- Do not expose the device during storage and transport to temperatures higher than 70°C (158°F).
- Ensure good ventilation.
- Observe the safety and warning information for devices with flammable refrigerants (see → Chapter 1.6.2.1).

► In event of damage, contact the maintenance service (see → Chapter 10.5).

### ⚠ WARNING



Transport the device with floor trucks. Risk of injury to persons during collisions.

- Observe the transport routes for floor trucks.
- Secure the cargo.
- Floor trucks must only be operated by trained persons.
- Observe the details for the stacking height on the packaging.

### NOTE

- **Material damage** due to transport and storage.
  - Do not expose the device during storage and transport to temperatures higher than 70°C (158°F).
  - Transport and store the device only in a type-based stable operating position (horizontal alignment).
  - If the device was still inclined during transport, wait a minimum of 2 hours before commissioning.
  - When being delivered, ensure continuous accessibility up to the installation room. (Observe the transit heights/widths/installation space height and adequate shunting radii.)

## 6 Unpacking

Check the device for damage (bumps, scratches) before and during unpacking. Contact the maintenance service in case of damage (see → 10.5).

### ⚠ WARNING

Disposal of packaging material and films. Danger of suffocation.

- Keep packaging material and foils away from children.
- Do not let children play with them.

### ⚠ WARNING



For devices of type R-290: Damage to the refrigerant circuit. The refrigerant can escape and create an explosive gas/air mixture. Risk of fire.

- Ensure good ventilation.
- Observe the safety and warning information for devices with flammable refrigerants (see → Chapter 1.6.2.1).
- In event of damage, contact the maintenance service (see → Chapter 10.5).

### ⚠ CAUTION



Heavy device parts. Hands can be jammed.



- When unpacking, pay attention to fingers and hands.
- Wear protective gloves.

### NOTE

- **Material and property damage** due to missing parts of the device.
  - Check for loose parts in the packaging.
  - Do not dispose of loose parts. If it cannot be determined where the loose parts belong, check with the maintenance service (see → Chapter 10.5).

## 7 Setup and installation

The operating company can set up and install the device. For technical data for interfaces, see → 2.2. Technical modifications to the device can only occur with the coordination and approval of the manufacturer.

### NOTE

- **Material and property damage** due to congestion of the warm exhaust air (heat accumulation).
  - The exhaust air must be able to escape freely to the rear side.
  - Minimum distance with separate installation  
All round: 100 mm
  - Minimum distance with block installation (see → Fig. 5.)  
A = 0 mm  
B = 100 mm / 155 mm (device-specific)

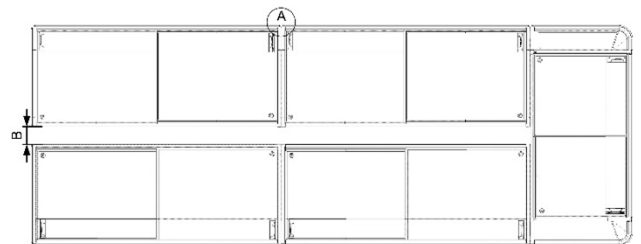


Fig. 5: Minimum distances with block installation

- With the block installation, the ventilation openings on the device cover must not be blocked.
  - Superstructures can be attached only in agreement with the manufacturer.
- Minimum distance 100 mm.

The devices may be connected using bus cables (see → Chapter 4.2.2.3, 4.2.3.3).

The temperature display, safety instructions and power rating plate (see → Chapter 2.2.1) must always be kept clear.

### ⚠ WARNING



Danger of tilting of the device. People's bodies can be jammed.



- Remove the transport pallet only when the stable, final installation position has been reached. If you have questions, contact the maintenance service (see → Chapter 10.5).
- Do not climb onto or into the device.

**⚠ WARNING**

For devices of type R-290: If the refrigerant circuit is damaged, the refrigerant can escape and create an explosive gas/air mixture. Risk of fire.

Do not close ventilation openings in the device housing. Use only original accessory parts.

► The device must only be installed in well-ventilated areas.

► Do not install the device in cellars or lowered areas.

► Ducts and wall penetrations in the area of the devices must be sealed as fire-proof.

► Drilling or other work on the device is not permitted.

**⚠ CAUTION**

Cutting injuries in the case of material breakage. Danger of falling.

► Do not climb onto or into the device.

**⚠ CAUTION**

Heavy devices. Hands can be jammed.

► During setup and installation, pay attention to fingers and hands.

► Wear protective gloves.

**NOTE**

- **Material and property damage** from foreseeable misuse.

► Set up the device in a stable operating position (horizontal alignment).

► Install the device only on the sliding feet / swivel castors that are already mounted.

► Do not expose the device to direct heat radiation at the installation site.

► Do not expose the device at the installation site to the direct action of air conditioning and ventilation.

► Do not attach any thick insulating materials to the outer walls. Advertisement signs may only be stuck on as thin film.

**NOTE**

- **Material, property and environmental damage** caused by damage to the refrigerant circuit.
- ► Drilling or other work on the device is not permitted.

**Tasks of the operating company when installing:**

- After installation, block the device castors (optional) with the parking brake.

**- Installation and removal of the glass cover**

Installation and removal of the glass cover is, e.g. necessary when carrying out a complete defrosting with subsequent cleaning or if the glass cover is damaged.

For the safe handling of glass, see → Chapter 1.6.3.

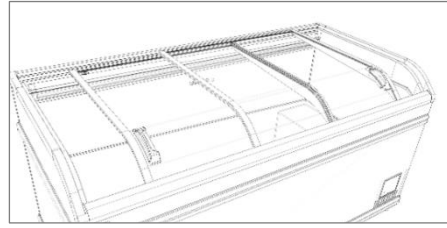
**Devices with glass sliding cover**

Fig. 6: Device with glass sliding cover

**Removal glass sliding cover**

1. Open the sliding cover.
2. With both hands, lift the sliding cover at the rear and pull back until it can be removed to the front.
3. Carefully lift out with both hands.

**Installation glass sliding cover**

1. Insert the lower smaller sliding cover.
2. Insert the upper sliding cover.
3. Completely close the cover.
4. Check for trouble-free function.

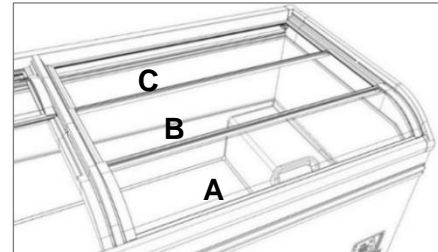
**Devices with push-back glass cover**

Fig. 7: Push-back glass cover (3 piece)

**Removal of the push-back glass cover (3 piece)**

1. Push the front cover A (see → Fig. 7) with handle to the rear to the recess D (see → Fig. 8).
2. Lift out cover A with recess D (front and rear rollers).

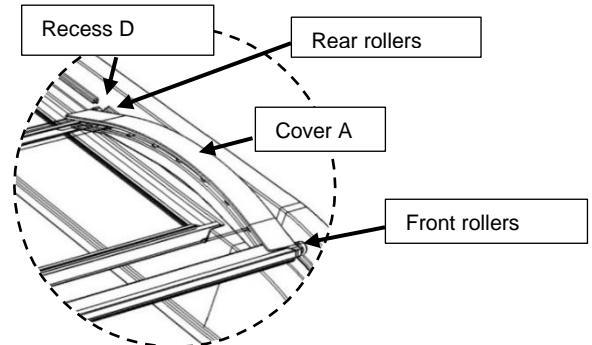


Fig. 8: Push-back glass cover pull out

3. If present, lift out the middle cover B (see → Fig. 7).
4. Lift out the rear cover C (see → Fig. 7).

**Installation of the push-back glass cover (3-piece)**

1. Insert rear cover C (see → Fig. 7)
2. Insert middle cover B (see → Fig. 7) and push forwards approx. 5 cm over the recess D (see → Fig. 8).
3. Insert cover A with the rear rollers at recess D (see → Fig. 7/8).
4. Push covers A and B together to the rear until the front rollers of cover A engage at recess D.
5. Completely close cover A.
6. Check for trouble-free function.

## 7.1 Electrical connection

Connection to the power supply is carried out by the operating company. For technical data, see → Chapter 2.2.

### ⚠ WARNING



Connect the device to the power supply. Contact with live parts may cause electric shock. Risk of fire due to sparks or overloading.



► Work on the electrical system may only be performed by qualified staff.

► Refer to the local electrical safety regulations.

► Follow the applicable standards and safety instructions.

► Follow the information on the power rating plate (see → Chapter 2.2.1). The network voltage and the network frequency must match the specifications on the power rating plate.

► Do not connect any damaged devices to the circuit.

► Damaged parts (such as power cords) must only be replaced by qualified staff.

Contact the maintenance service (see → Chapter 10.5).

► Do not squeeze or bend power supply cords.

► Observe the minimum requirement for connection cables (see → Chapter 2.2).

► The device must be electrically protected according to the applicable laws and regulations and the requirements of AHT (see → Chapter 7.2).

► Connect the device only to a network circuit with protective grounding.

► Do not use extension cords or multiple power strips.

► Concealed electrical parts must not be damaged. Drilling or other work on the device is not permitted.



### NOTE

• **Material and property damage** caused by non-AHT-approved deviations (voltage, frequency) in the operator's electrical network.

► The manufacturer is not responsible for damage to the electrical device of the operator and any subsequent damage caused thereby.

• **Material and property damage** due to incorrect electrical connection.

► Load shedding circuits or device shutdowns are not permitted.

### Device connecting cable

A labeling tag with the snowflake is located at the end of the connecting cable.



Fig. 9: Snowflake symbol

The device connecting cable is used to supply the cooling unit.

### NOTE

• **Property damage** from switching off the cooling unit.  
► Do not connect the device connecting cable to the power supply for the market light.

### Light connecting cable

A labeling tag with the lamp symbol is located at the end of the connecting cable.



Fig. 10: Lamp symbol

The light connecting cable offers the option to switch off the device lighting together with the market lighting (saving energy).

### Combined device / light connecting cable:

No labeling tag.

The combined device / light connecting cable is used for the common supply of the cooling and lighting.

### NOTE

• **Property damage** from switching off the cooling unit.  
► Connect the device / light connecting cable to a voltage supply that is permanently supplied with power.

### Device with IEC box

For technical data, see → Chapter 2.2

Devices can be equipped with an IEC box in combination with plugged connecting lines (see Fig. 11).

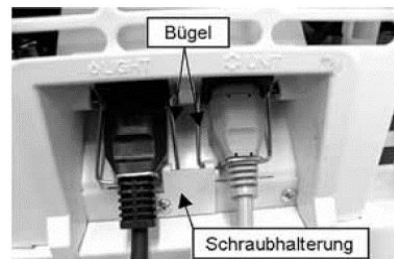


Fig.11: Connection with IEC box

### ⚠ WARNING



Faulty electrical connection on the IEC box. Contact with live parts may cause electric shock. Risk of fire due to sparks or overloading.



► The bar of the IEC box must be fixed correctly and secured by the screw holder (see Fig.11).

ANT recommends (e.g. with block installation) the use of a cable duct with installed or mounted sockets. In the case of floor assembly, the height of the cable duct must reach no higher than the lower edge of the rear venting grille.

## 7.2 Electrical protection

Each device must be equipped with an electrical fuse.

For technical data, see → Chapter 2.2.

### ⚠ WARNING



Faulty/inadequate electrical fuse. Contact with live parts may cause electric shock. Risk of fire due to sparks or overloading.  
► Provide adequate protection.



- Observe applicable local regulations (e.g. for the electric installation and operation of the device).
- Follow the applicable standards and safety instructions.
- Never connect more than 2 devices to a miniature circuit breaker or a residual miniature combination switch (RCBO). (AHT recommendation: max. 1 device)
- Never connect more than 8 light connections to a miniature circuit breaker or a residual miniature combination switch (RCBO).

One of the following electrical fuses must be used:

- Circuit breaker (CB) in combination with residual current circuit breaker (RCCB/GFCI).
- FI-LS combination switch (residual current breaker with overcurrent protection, RCBO).

Observe the applicable standards such as:

- VDE0100-410
- ÖVE/ÖNORM E 8001-1/A1
- NEC 70
- NBR 5410

## 8 Commissioning

The device must only be commissioned in the intended installation room and after checking for completeness. The operating company can carry out the commissioning.

### ⚠ WARNING



Damage to the electrical system and/or the refrigerant circuit.



Contact with live parts may cause electric shock. For devices of type R-290: The refrigerant can escape and create an explosive gas/air mixture. Risk of fire due to sparks or overloading.



► Do not commission a damaged device.

► Do not connect damaged parts (such as connecting lines) to the circuit.

► Damaged parts (such as connection lines) must only be replaced by qualified staff.

► Observe the safety and warning information for devices with flammable refrigerants (see → Chapter 1.6.2.1).

► In event of damage, contact the maintenance service (see → Chapter 10.5).

### NOTE

- **Material damage** due to incorrect ambient conditions
  - Adjust the device to the ambient temperature before commissioning.
  - The ambient temperature must not be less than 16°C (60.8°F).

Insert the plug of the device connecting cable or combined device/light connecting cable. The device with the mechanical controller starts to

work immediately, and with the electronic controller after a delay of max. 2 min.

With devices that have their own light connection, insert an additional light connecting cable.

Select the desired operating mode, see → Chapter 4.2/2.2.

After commissioning, it may take 3 to 4 hours until the desired temperature is reached.

## 9 Operation (use)

Only trained operating staff are allowed to operate the device.

### ⚠ WARNING



Damage to the electrical system and/or the refrigerant circuit during operation. Contact with live parts may cause electric shock.



Risk of fire due to sparks or overloading. Devices of type R-290: The refrigerant can escape and create an explosive gas/air mixture. Risk of fire.



► In the event of damage:

1. Disconnect the device.
2. Secure the device against restarting.

Contact the maintenance service (see → Chapter 10.5).

► Observe the safety and warning information for devices with flammable refrigerants (see → Chapter 1.6.2.1).

► Avoid external force to the device such as careless movements with floor trucks or floor cleaning machines.

► Avoid transmission of pulsations and vibrations to the device.

### ⚠ CAUTION



Risk of glass breakage/material breakage. Cutting injuries to the body.

► Do not apply any load to the glass cover.

► Do not climb onto or into the device.

► Check the glass elements and plastic frames for damage. In the event of damage, contact the maintenance service immediately (see → Chapter 10.5).

► Check for breakage of stored glass containers (refrigerators).

### ⚠ CAUTION



Disposal of broken glass. Cutting injuries to hands.

► Wear protective gloves to remove splintered glass parts and the goods that may have been damaged.



► Remove all splintered glass parts and damaged goods carefully and completely.

### NOTE

- **Material damage** from foreseeable misuse.
  - Operate the device in a stable operating position (horizontal alignment).
  - Operate the device only mounted on the sliding feet and swivel castors.
  - Regularly check that the device is in good condition. Damage must be repaired immediately.

► Avoid transmission of pulsations and vibrations to the device.

► Avoid external force to the device such as careless movements with floor trucks or floor cleaning machines.

• **Property damage** from foreseeable misuse.

► Do not operate the device above the climate class indicated on the power rating plate or on the additional stickers (see → Chapter 2.2.1).

► The ambient temperature must not be less than 16°C (60.8°F).

► Operate the device only with a glass cover.

► Check the temperature (see → Chapter 4.1).

► Stored goods must be checked by the operator in the case of power failure (temperature control).

► Check regularly for foreign objects in the goods area. Incorrectly stored goods must be removed immediately.

► Remove food residues, such as spilled liquids, and packaging waste (see → Chapter 10.1).

► Regularly check that the glass cover is closed.

In the case of special climate conditions with high atmospheric humidity, condensation formation (condensation water) can occur in the interior of the device. This condensation must be removed for hygiene reasons.

**WARNING**



For devices of type R-290: Drying of condensation water by rubbing. Electrostatic discharge and spark formation. Sparks can ignite the leaking refrigerant when the refrigerant circuit is damaged/not sealed. Risk of fire.

► To remove condensation, use a damp cloth or sponge.

► Do not use dry cloths or sponges for rubbing dry.

## 9.1 Loading

Access to the goods is from above.

The device must only be loaded with goods when the temperature specified for the product has been reached. Temperature display (see → Chapter 4.1). Loading is only permitted up to the stacking mark indicated on the inside (see → Fig. 12).

The following applies for device series (U):

Upper stacking mark for deep-freezing “-” and cooling “+”.

Lower stacking mark for meat cooling “S”.



Fig. 12: Stacking mark

**NOTE**

• **Property damage** from foreseeable misuse on devices with (AD) function.

► Carry out loading between 06:00 and 20:00.

**CAUTION**



Cutting injuries in the case of material breakage.

► Do not climb onto or into the device during loading.

**CAUTION**



Falling objects.

Impact injury. Cutting injury in the case of glass breakage.



► Do not place objects on the device.

**CAUTION**



Opening/closing the glass cover. Hands (parts of your body) can be jammed.

► During opening/closing, do not reach into the opening gap.

► When opening/closing, pay attention to other people.

**CAUTION**



Low temperature. Frostbite on the skin.

► Wear protective gloves when loading.



**NOTE**

• **Property damage** from foreseeable misuse.

► The device must only be loaded with goods when the temperature specified for the product has been reached.

► Insert the goods carefully.

► Close the glass cover immediately after loading.

## 9.2 Decommissioning and recommissioning

**WARNING**



Work on the electrical system.

Contact with live parts may cause electric shock.

► Work on the electrical system may only be performed by qualified staff.

► Observe the electrical safety rules before starting work.



1. Disconnect the device.

2. Secure the device against restarting.

**Reasons for decommissioning by qualified staff**

- Maintenance, service, repair (see → Chapter 10.3)

**by operating staff**

- Damage to the device (e.g. broken glass cover).

## 9.2.1 Decommissioning

The decommissioning must only be performed by trained **operating staff** or **qualified staff**.

### ⚠ WARNING



Decommissioning of the device.  
Contact with live parts may cause electric shock.



- ▶ Only trained staff may turn off the device.
- ▶ Switch off the device and secure it against restarting.

### Steps for decommissioning for the operating staff:

1. Move the goods to another device with the same product temperature class.
2. Switch off the cooling function (see Chapter 4.2).

### Prolonged decommissioning:

Perform steps for decommissioning (see → above).

- Perform basic cleaning (see → 10.2.1).
- Leave the cover open.

### NOTE

- **Material damage** with prolonged decommissioning.
  - ▶ Do not expose the device to direct heat radiation.
  - ▶ Do not place anything in or on the device.
  - ▶ Store the device only in its operating position.

## 9.2.2 Recommissioning

See commissioning → Chapter 8

## 9.3 Faults in operation

### Display by alarms:

There are different types of alarms to indicate faults during operation:

### Display operating element:

**Mechanical controller** (see → Chapter:4.2.1):

- optional red warning lamp

**Electrical controller** (see → Chapter:4.2.2/4.2.3):

- Fault code and buzzer (optional)
- flashing red point

### External warning system (optional):

The plug connection for connecting to the warning system is located on the back of the device. For technical data, see → Chapter 2.2

If a fault occurs, contact pair 3 and 5 closes and contact pair 3 and 6 opens.

### NOTE

- **Material damage and property damage** in case of alarm indication by fault code/buzzer, warning lamp or by a warning system.
  - ▶ Move the goods to another device with the same product temperature class.
  - ▶ Contact the maintenance service immediately (see → Chapter 10.5).

Additional remote monitoring possibilities can be obtained from the maintenance service.

## 10 Maintenance

Monitoring tasks by operating staff:

Monitoring tasks	Frequency	see → Chapter
Check for - flawless state of the devices - foreign objects in the goods compartment - closed glass cover	continuously	1.3.9
- Damaged glass cover/glass element - Breakage of stored glass containers (cooling devices)	continuously	1.6.3.9
- Temperature display	several times daily	4.1.9
- Correct loading of goods	continuously	9.1
- Check for ice formation on the inside container	continuously	10.1
<b>Checking for contamination</b>		
- Contamination of the device	daily	10.2.1
- Food waste and packaging waste	daily	10.2.1
- Floor (around the device)	daily	10.2.1
- Puddle formation in front of/under the device (condensation)	daily	3.1
- <b>Devices with (AD) function:</b> Condensation water	continuously	10.1.1

### ⚠ WARNING



Devices of type R-290: Electrostatic discharge and sparking with flammable refrigerant. Sparks can ignite the leaking refrigerant when the refrigerant circuit is damaged/not sealed. Risk of fire.

- ▶ To remove condensation and for cleaning, use a slightly damp cloth or sponge.
- ▶ Do not use dry cloths or sponges to wipe dry (risk of electrostatic charging and sparking).
- ▶ Do not operate any electrical devices (e.g. wet vacuum cleaners) inside the refrigerator compartment that do not comply with the manufacturer's recommended design, unless they have an explosion protection mark (see → 1.2).

## 10.1 Defrosting

**Responsibility:** Operating company/operating staff

**For devices without (AD) function,** a complete defrosting must always be carried out, see → 10.1.1.

Devices **with (AD) function** defrost automatically at regular intervals (see → Chapter 3.1). In addition, with high ice formation in the inside container, a semi-automatic defrosting (see → Chapter 4.2.2.4/ 4.2.3.4) can be started by the operating company. For devices with operating mode cooling ("+", "S"), the automatic defrosting can be set to inactive ex-factory.

### 10.1.1 Complete defrosting

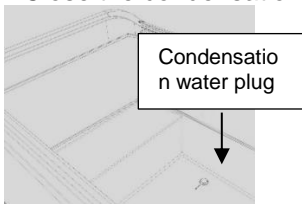
**On devices with and without (AD) function.**

We recommend combining the complete defrosting with the basic cleaning.

#### Defrosting interval

- For hygiene reasons, at least twice a year.
- With devices from series (U/V):  
Each time before switching to another operating mode.

#### Carrying out a complete defrosting:

	Mechanical controller	Electronic controller
1.	Move the goods to another device with the same product temperature class.	
2.	Switch the cooling function off	
	Press the <b>[DEFROST]</b> button. The green lamp (3, 3a or 3b) goes out. See → Chapter 4.2.1	Press the <b>[STANDBY]</b> button for at least 1 second or the <b>[STANDBY RESET]</b> for at least 3 seconds. "---" is shown on the display. See → Chapter 4.2.2.1/4.2.3.1
3.	Remove the cover (see → Chapter 7).	
4.	Remove all accessory parts from the device interior, e.g.: air ducts, shelf grille, goods grate. The blower carrier remains in the device.	
5.	Remove condensation water.	
	Devices of type R-404A: Wet vacuum cleaner or sponge. For devices of type R-290: Wet vacuum cleaner/electrical devices with explosion protection marking or slightly damp cloth (observe the warning information, see → Chapter 10).	
	Device with condensation water plug (optional): <ul style="list-style-type: none"> <li>- Place a collecting tray underneath the drain.</li> <li>- Remove condensation water plug.</li> <li>- Allow the condensation water to drain.</li> <li>- Close the condensation water plug again.</li> </ul>  <p>Fig.13 Device with view of the condensation water plug</p>	
6.	Clean the inside area and then wipe dry. For devices of type R-290: Observe the warning information, see → Chapter 10.	
7.	Correctly reinstall all accessory parts.	
8.	Correctly install the cover (see → Chapter 7) and close completely.	
9.	Switch on the cooling function	
	Press the <b>[DEFROST]</b> button. Lamp (3, 3a	Press the <b>[STANDBY]</b> button for at least 1 second or the <b>[STANDBY RESET]</b>

	or 3b) lights up green again. See → Chapter 4.2.1	for at least 3 seconds. The temperature appears on the display screen. See → Chapter 4.2.2.1/4.2.3.1
--	---	--

#### NOTE

- **Property damage** from foreseeable misuse.
  - The device must only be loaded with goods when the temperature specified for the product has been reached.

With a complete defrosting, devices that are connected via a bus system must remain on the power supply and be protected electrically.

### 10.2 Cleaning

Reasons for regular and thorough cleaning (basic cleaning):

- Assurance of the required hygiene.
  - Always keep the goods interior in a clean condition.
- Lowest possible energy consumption.
- Maintenance of trouble-free operation.
- Extension of the life of the device.

#### ⚠ WARNING



Damage to the electrical system and refrigerant circuit by using steam and high-pressure cleaners. Contact with live parts may cause electric shock.  
Devices of type R-290: The refrigerant can escape and create an explosive gas/air mixture. Risk of fire due to sparks or overloading.  
► For basic cleaning, do not use steam and high-pressure cleaners (→ see Chapters 1.6.1 and 1.6.2.1).

#### ⚠ CAUTION



Cutting injuries in the case of material breakage.  
Danger of falling.  
► Do not climb onto or into the device during cleaning.

For the safe handling of glass, see → Chapter 1.6.3.  
For cleaning, wear protective gloves.

#### 10.2.1 Basic cleaning

**Responsibility:** Operating staff

**Cleaning interval:** As required (see → Chapter 10 "Checking for contamination")

#### Time of cleaning

Outside: Possible at any time

Inside: When the cooling function is switched off.

#### Cleaning agent:

#### NOTE

- **Material damage** from excessive quantities of cleaning agent.
  - Use cleaning devices only moistened with cleaning agent.

Cleaning agent	Cleaning area
Clean water	Device and glass surfaces, outside and inside
In the case of greater contamination, slightly alkaline cleaning agent (e.g. neutral soap and water).	Device, outside and inside Glass surfaces outside
<b>Glass cleaner</b> (recommended pH value 5-7)	Glass surfaces outside

**NOTE**

- **Material damage** due to incorrect cleaning agents.
  - Do not use abrasive, chemically aggressive, strongly acid (pH value <4), strong alkaline (pH value > 8) or easily flammable cleaning agents.

**Cleaning devices:**

All cleaning devices must be clean.

Cleaning device	Cleaning area
<b>For cleaning</b>	
Moist soft cotton cloth	Device and glass surfaces, outside and inside
Damp absorbent cloth or sponge	Device inside
<b>For drying</b>	
Slightly dampened soft cotton cloth	Device and glass surfaces, outside and inside

**NOTE**

- **Material damage** due to incorrect cleaning devices.
  - Damage to the surfaces.
    - Do not use any hard, sharp objects.
    - Do not use coarse, harsh cleaning devices (e.g. steel wool)

**Cleaning steps during operation:**

1. Clean side walls and device frame.
2. If present, clean kick and water protection strips.
3. Clean the glass surfaces outside.
4. Remove food residues, such as spilled liquids, and packaging waste.
5. Clean the cover runner rail.
6. Dry all cleaned surfaces and parts.

**Cleaning steps only with the cooling function switched off:**

1. Move the goods to another device with the same product temperature class.
2. Switch off the cooling function (see → Chapter 4.2.1, 4.2.2.1, 4.2.3.1) and allow to defrost.
3. Remove the cover (see → Chapter 7).  
Clean before reinserting.  
Also clean the associated plastic bezels/device frame and seals. Do not apply large amounts of cleaning agent to these surfaces to be cleaned.

**NOTE**

- **Material damage** due to improper cleaning.
  - Damage to the surface of plastic bezels/device frame and impairment of the function of seals.
    - There must not be any detergent residues on the plastic bezels/device frame and seals.

► Always clean plastic bezels/device frame and seals again with clean water, and dry.

4. Remove all accessory parts from the device interior, e.g.: air ducts, shelf grille, goods grate. Clean before reinserting.
5. Remove food residues, such as spilled liquids, and packaging waste.
6. Cleaning the inside of the device.  
For devices **with** (AD) function:
  - Clean the defrosting channel.
  - Lift out and clean the condensation water sieve.

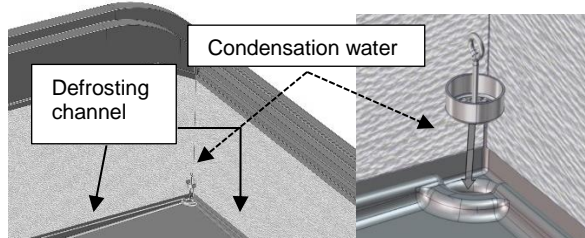


Fig.14 Condensation water sieve

7. Where required, clean the blower fan carrier (see Fig. 15), for this purpose, fold up and clean the surface underneath carefully with a damp cloth.

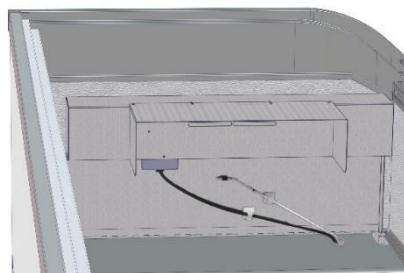


Fig. 15 Blower fan carrier

8. Dry all cleaned surfaces and parts.
9. Correctly reinstall all accessory parts.
10. Correctly reinstall the cover (see → Chapter 7).
11. Clean the floor in front of the device.

**NOTE**

- **Property damage** from foreseeable misuse.
  - The device must only be loaded with goods when the temperature specified for the product has been reached.

**10.3 Maintenance, service and repairs**

**Responsibility:** Qualified staff

The devices are maintenance-free. The service and repair work, including subsequent functional testing, must be performed by qualified staff. For questions about maintenance, please contact the maintenance service (see → Chapter 10.5.).

**⚠ WARNING**

Work on the electrical system and refrigerant circuit. Contact with live parts may cause electric shock. For devices of type R-290: The refrigerant can escape and create an explosive gas/air mixture. Risk of fire due to sparks or overloading.

► Work on the electrical system and refrigerant circuit may only be performed by qualified staff.



- Follow the safety instructions in → Chapter 1.6.
- Before any service and repair work
  1. Disconnect the device.
  2. Secure the device against restarting.
- Recommissioning and functional testing may only be performed by qualified staff.

### CAUTION



Sharp edges, rotating parts. Risk of injury to the hands and body. Hot surfaces. Risk of burns in case of contact with skin.



► Service and repair work on the device may only be performed by qualified staff.



► Wear protective gloves.

► Touch hot surfaces (in particular compressor) only after they have cooled down.

## 10.3.1 Changing the lamps

### Lamps used:

- LED bars
- Fluorescent tubes

In the case of failure of a lamp, please contact the maintenance service (see → chapter 10.5.).

For technical data, see → Chapter 2.2.

### WARNING



Work on the electrical system. Contact with live parts may cause electric shock.

► The lamp replacement may only be performed by qualified staff.

► Observe the electrical safety rules before starting work:



1. Disconnect the device.
2. Secure the device against restarting.

### CAUTION



Breakage of fluorescent tubes. Cutting injuries to the hands and body.

► Wear protective gloves to remove splintered glass parts and the goods that may have been damaged.



► Remove all splintered glass parts and damaged goods carefully and completely.

## 10.4 What to do if...

All devices are thoroughly tested for performance and safety in the AHT testing center. If a fault occurs (see also → chapter 9.3), with loud noises or vibrations or on failure of the operating and display elements (see → Chapter 4.2), contact the maintenance service immediately (see → Chapter 10.5) and report the following:

- Device type,
- Serial number of the device (see power rating plate → Chapter 2.2.1 / additional stickers on the left frame of the device; see → Fig.16),

- Type of fault.

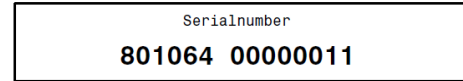


Fig.16: Example, sticker with the 14-digit serial number

## 10.5 Maintenance services

For questions regarding maintenance (service, repair, etc.), please contact your regional responsible **AHT service partner**:

AHT service line: 00800/73783248

Online contact: [www.aht.at/service](http://www.aht.at/service)

QR code:



The maintenance services have access to all necessary and current information for commissioning and maintenance, e.g. spare parts lists.

## 11 Disposal

### WARNING



For devices of type R-290: Escaping refrigerant or residues of refrigerant can create an explosive gas/air mixture. Risk of fire.

► Do not damage the pipes.

► Open the refrigerant circuit correctly before dismantling and disposal and suction off the refrigerant safely and completely. There must not be any residues left in the refrigerant circuit.

► Suctioning off of refrigerant must only be performed by qualified staff.

### CAUTION

Improper disposal. Environmental damage.

► Pay special attention to safe and environmentally sound disposal

- of the refrigerant,
- of the insulating foam (e.g. the heat-insulating material is polyurethane foam with pentane)
- of the compressor oil,
- of the battery.

► Separate collection of electrical and electronic devices according to the applicable national disposal regulations (e.g. WEEE within the EU) and the provisions of the local waste disposal partner.

► Devices must not be disposed of with household waste.



**EC CERTIFICATE OF CONFORMITY**

Manufacturer: AHT Cooling Systems GmbH  
Werksgasse 57  
A-8786 Rottenmann, Austria

Authorized person for  
technical documents. Dipl.-Ing. Reinhold Resch  
Werksgasse 57  
A-8786 Rottenmann, Austria

Product designation: Commercial refrigerator/freezer

Type designation: According to device models overview at the start of this operating manual  
(SNo.361929).

The serial number, important technical data and approval marks are indicated on the power rating plate of each device.

The sole responsibility for the issuance of this declaration of conformity is borne by the manufacturer.

The product described above complies with the provisions of the directives:

**Machinery Directive 2006/42/EC of May 17, 2006**

**EMC Directive 2014/30/EU of February 26, 2014**

**RoHS Directive 2011/65/EU of June 08, 2011**

The conformity of the above-described product, with the essential requirements of the directive is proven by the technical documentation and the full conformity with the following standards:

Applied harmonized standards

**DIN EN 60335-1 (VDE 0700-1):2012-10; EN 60335-1:2012**

**DIN EN 60335-1 Ber.1 (VDE 0700-1 Ber.1):2014-04; EN 60335-1:2012/AC:2014**

**EN 60335-1:2012/A11:2014**

**DIN EN 60335-2-89 (VDE 0700-89):2010-12; EN 60335-2-89:2010**

**DIN EN 62233 (VDE 0700-366):2008-11; EN 62233:2008**

**DIN EN 62233 Ber.1 (VDE 0700-366 Ber.1):2009-04; EN 62233 Ber.1:2008**

**DIN EN ISO 12100:2011-03; EN ISO 12100:2010**

**DIN EN 61000-3-2 (VDE 0838-2):2015-03; EN 61000-3-2:2014**

**DIN EN 61000-3-3 (VDE 0838-3):2014-03; EN 61000-3-3:2013**

**DIN EN 55014-1 (VDE 0875-14-1):2012-05; EN 55014-1:2006 + A1:2009 + A2:2011**

**DIN EN 55014-2 (VDE 0875-14-2):2016-01; EN 55014-2:2015**

Other standards applied in the design and construction of the products:

**EN ISO 23953-1:2015**

**EN ISO 23953-2:2015**

**EN 60079-15:2010 (device type R-290)**

In the case of a technical change to the product described above that is not approved by us, this declaration becomes invalid.  
Signed for and on behalf of the manufacturer:

Rottenmann, 22.12.2017



\_\_\_\_\_  
Dipl.-Ing. Reinhold Resch  
Head of Development Dept.  
Authorized representative for technical documentation

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**AHT Cooling Systems GmbH (Headquarters)**

8786 Rottenmann • Werksgasse 57 • Austria

**Tel:** +43 (0) 3614 2451 0 **Fax:** +43 (0) 3614 2451 8 **E-mail:** [office@aht.at](mailto:office@aht.at) **Internet:** [www.aht.at](http://www.aht.at)

**AHT Cooling Systems Brasil Ltda.**

Rua Onório Bortolato • 1065 – Bairro Pedreiras Navegantes – SC - 88375-000 • Brazil

**Phone:** +55 (0) 11 4702 / 30 99 **Fax:** +55 (0) 11 4702 / 71 68 **E-mail:** [info@br.aht.at](mailto:info@br.aht.at)

**AHT Cooling Systems (Changshu) Co., Ltd.**

215500 Changshu • 88 Yangguang Avenue

Jiangsu Province • P. R. China

**Phone:** +86 (0) 512 5236 7100 **Fax:** +86 (0) 512 5236 2393 **E-mail:** [office@cn.aht.at](mailto:office@cn.aht.at)

**AHT Cooling Systems USA, Inc.**

7058 Weber Blvd. • Ladson, SC 29456 • USA

**Phone:** +1 (0) 843/767 6855 **Fax:** +1 (0) 843/767 6858 **E-mail:** [info@us.aht.at](mailto:info@us.aht.at) **Internet:** [www.ahtusa.net](http://www.ahtusa.net)